

The Essential 3:
National Mathematics Advisory Panel: Major Topics of School Algebra
Professional Development Lesson

Topics of Algebra

Related Resources	Bradley Witzel (32 video clips) Instructional Innovations Unit Website Doing What Works Website	
Materials Needed	Pencils, small groups, chart paper	
<i>Step</i>	<i>Description</i>	<i>Time</i>
Introduction	Use slide #1-3 which includes an icebreaker activity (use if appropriate for your group)	5 min.
Visual Diagram	Slide #4	1 min.
Multimedia Overview: National Mathematics Advisory Panel	Slide #5: Use the video to introduce Major Topics of School Algebra	3:25 min.
Multimedia Overview: School Algebra Topics	Slide #6: Use this multimedia overview to learn about the recommended algebra topics, the importance of making connections across topics, and helping students learn algebra.	7:08 min.
Compare	Slide #6: Use Handout #1 (MT standards) In small groups compare MT standards with the major topics NMP recommends.	5 min.
Share	Slide #6: Where are these recommendations taught?	1-2 min.
Think-Pair-Share	Slide # 7: What are barriers teachers have for teaching algebra?	1-2 min.

Video: Dr. Wu “What Algebra Teachers Need to Know”	Slide # 7: Listen to Dr. Wu talk about the importance of helping teachers develop a deep understanding of their subject matter and the need to focus instruction on the most critical aspects of algebra and emphasize the connections among topics.	5:46 min.
Review and discuss	Review Slides #8-10: Key Concepts	3-5 min.
Small group discussion	Slide #11: Using Handout #2: <i>Algebra 1 Initial Units</i> , ask what do you notice about the essential questions from this sample? How do they compare to the level of questions you ask your students? How do you currently organize your units of study?	5-7 min.
Audio clip: Expert Interview: District Perspective on Algebra	Slide #12: The district mathematics coordinator describes the process of establishing essential algebra standards and aligning expectations with end-of-course and interim assessments. Ask participants to take write down any ideas they want to remember from this audio clip.	5:47 min.
Share	Slide #12: Quickly ask participants to share what they wrote down.	1-3 min.
Preview and Discuss	Slide #12: Preview and consider the use of Handout #3: <i>Topics of Algebra Review</i> . Allow staff time to preview and small group discussion.	6-8 min.
Share	Slide #12: Ask: How can Handout #3 be used?	2-3 min.

Think-Pair-Share	<p>Slide #12: Have participants scan handout #4: <i>Learning From Algebra Teaching Peers</i>, to understand how algebra teachers can use this observation tool to learn from other teachers and determine which practices might be adaptable to their own teaching.</p> <p>Discuss with your right shoulder partner how this tool could be used in your district. What are some pros to using a tool like this? What might be some barriers to the use of this type of tool? How might you implement this tool?</p>	10-15 min.
<u>Multiple Paths</u>		
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Multimedia Overview: Multiple Pathways to School Algebra	Slide #13: Watch this multimedia overview to learn more about the importance of expectations that all students will learn algebra and the various curricular approaches that enable teachers to respond flexibly to a range of student levels and abilities.	7:17 min.
Explain	Slide #14: Read slide that summarizes that multiple paths of learning algebra will allow all students to learn algebra	1-2 min.
Review and Discuss	Slides #15-17: Key Concepts	3-5 min.
Think-Pair-Share	Slide #18: Think of barriers for students to learn algebra, pair, and share. Write shared comments on chart paper.	2-3 min.

Video: Instructional strategies for struggling Algebra Students	Slide #18: Dr. Grossen tells about practical ideas for working with students who are struggling with algebra, focusing on weaving together instruction in preparatory skills along with algebra concepts. Have participants write down strategies Dr. Grossen refers to on a sheet of paper.	6:41 min.
Presentation: Helping Struggling Learners in Algebra	Slide #19: Hear ideas from teacher, Sally Collins, for overcoming students' lack of preparation for algebra.	6:19 min.
Discuss	Slides #20-22: Discuss the questions from these three slides.	15-20 min.
Review	Slide #23: Handout #5: <i>Algebra Pathways Inventory: Working with Struggling Algebra Students</i> .	3-4 min.
Discuss in small groups	Slide #23: Handout #5 Ask: How can you use this inventory? (If your purposes are to build an inventory at this PD session have participants list or highlight items on the inventory they want included in their school's/district's inventory.)	10-15 min.
Share	Slide #23: Share out regarding handout #5	5-7 min.